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EXAMINER

ART UNIT

PAPER NUMBER

2871

DATE MAILED:
01/07/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/936,510

Applicant(s)

Kim

Examiner
Walter Malinowski

Group Art Unit
2871



☒ Responsive to communication(s) filed on Dec 29, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1, 3, 4, and 6-39 is/are pending in the application

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1, 3, 4, and 6-39 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 10

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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1. The amendment to the rejection dated 12/29/99 has been received and entered.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama et al. (U.S. Patent #5,757,455) in view of Toko (U.S. Patent #5,793,459), Izumi (U.S. Patent #5,754,267), Lu et al. (U.S. Patent #5,870,164), Shirai (U.S. Patent #4,405,208), and Kanbe et al. (U.S. Patent #5,500,750).

Sugiyama et al. disclose a liquid crystal display in figure 10, comprising a first and second substrates; a liquid crystal layer between the first and second substrates (column 1, lines 66-67; column 2, lines 1-2); at least one uniaxial optical compensation film (48 or 49) which can be either negative type or positive type formed over the substrate (column 9 lines 51-59); a first alignment film with a plurality of first alignment direction, where at least two of the plurality of first alignment directions are either perpendicular or parallel to one another (figure 6G), formed on the first substrates and a second alignment film with a alignment direction perpendicular to the first

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alignment direction formed on the second substrate (column 2, lines 5-13). Sugiyama et al. also disclose a method of manufacturing such device including a method of forming the alignment layer including rubbing or exposing number of times in accordance with the number of the alignment directions to polarized ultraviolet rays to form the alignment directions (column 4, lines 28-49, column 5, lines 26-28).

Sugiyama et al. disclose all the limitations of above claims except for the liquid crystal display device being a reflective type with a reflective electrode formed over the first substrate and exposing the alignment layer to non polarized ultraviolet light to form the alignment directions and the reflective electrode has an opaque metal and a surface with convex portions.

Toko (U.S. Patent #5,793,459) disclose a method of manufacturing a liquid crystal display device including rubbing or exposing to polarized light or non polarized light to form the alignment direction (column 4, lines 13-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to expose the alignment layer to polarized or non-polarized light to form the alignment direction of the alignment layer of the display device disclosed by Sugiyama et al. since both exposing to the polarized and non polarized light cause the same effect, forming the alignment direction as described by Toko.

Also, it is well known to one of ordinary skill in the art at the time of the invention that a liquid crystal display device can be made either a transmissive type by forming a pixel electrode made of a transparent conductive film such as ITO or a reflective type by forming a pixel electrode made of a reflective conducting film such as Al. See Izumi (U.S. Patent #5,754,267),

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Lu et al. (U.S. Patent #5,870,164), Shirai (U.S. Patent #4,405,208). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to convert the display device disclosed by Sugiyama et al. to the reflective type display device by replace a pixel electrode (12b) formed on the first substrate with a reflective electrode.

Kanbe et al. disclose the reflective electrode has an opaque (i.e., non light transmissive) metal and a surface with convex portions (column 9, lines 20-65) to improve the reflective characteristic (column 2, line 41) and improve the display quality (column 3, line 23).

Therefore, it would have been obvious to use a reflective electrode having an opaque metal and a surface with convex portions, as taught by Kanbe et al., in the device of the combination of Sugiyama et al. and Toko.

Response to Arguments

3. Applicant's arguments filed on 12/29/99 have been fully considered but they are not persuasive.

Applicant argues that the prior references do not disclose "a reflective electrode over the first substrate, said reflective electrode having an opaque metal and being a surface with convex portions".

Kanbe et al. disclose a reflective electrode having an opaque metal and being a surface with convex portions. Kanbe et al. do this to improve the display quality and improve the reflective characteristic.

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The combination of Sugiyama et al., Toko, Izumi, Lu et al., Shirai, and Kanbe et al. makes obvious to pending Claims.

Conclusion

5. Any inquire concerning this communication or earlier communications from the examiner should be directed to Walter Malinowski whose telephone number is (703) 308-3172.

Any inquire of a general nature of relating to the status of this application or proceeding should directed to the group receptionist whose telephone number is (703) 308-1615.

wjm

January 5, 2000

Walter Malinowski
Walter Malinowski
Primary Examiner
Technology Center 2800